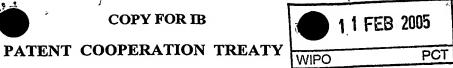




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1 MAR 2005



PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Artcle 36 and Rule 70)

Applicant's or agent's file reference 3FPO-07-05	FOR FURTHER ACTION SeeNotification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)					
	International filing date(day/month/year) Priority date (day/month/year) Priority date (day/month/year) 13 SEPTEMBER 2002 (13.0)					
International Patent Classification (IPC) or IPC7 C12Q 1/68						
Applicant KOREA RESEARCH INSTITU	TE OF BIOSCIENCE AND	BIOTECHNOLOGY et al				
and is transmitted to the applicant a	ccording to Article 36.	this International Preliminary Examining	; Authority			
2. This REPORT consists of a total of sheets, including this cover sheet. This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT). These annexes consist of a total of sheets.						
3. This report contains indications relating to the following items: I X Basis of the report II Priority III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV Lack of unity of invention V X Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI Certain documents cited VII Certain defects in the international application VIII Certain observations on the international application						
Date of submission of the demand		npletion of this report				
19 JANUARY 2004 (19.01.2004) 26 J	JANUARY 2005 (26.01.2005)				
Name and mailing address of the IPEA/K Korean Intellectual Property 920 Dunsan-dong, Seo-gu, I Republic of Korea	Office Paejeon 302-701, BAIK	K, Kyong UP	TON HE HE			
E:: 82-42-472-7140	Telenhone i	No. 82-42-481-5596				



International aplication No.

PCT/KR2003/001820

L	. Basi	s of the report					
1.	With	regard to the elements of the international application:*					
	X	the international application as originally filed					
	一	the description:					
		pages					
		pages					
l		pages, filed with the letter of					
l		the claims:					
1		pages, as originally filed					
		nages , as amended (together with any statment) under Article 19					
		pages, filed with the letter of,					
		the drawings:					
		pages					
		pages					
		filed with the letter of					
	ш	the sequence listing part of the description:					
1		pages, as originally filed pages, filed with the demand					
		pages, filed with the letter of, filed with the demand					
	• .						
2.	2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item. These elements were available or furnished to this Authority in the following language English which is						
		the language of a translation furnished for the purposes of integral in the following language English which is					
	<u>X</u> .	the language of a translation furnished for the purposes of international search (under Rule 23.1(b)). the language of publication of the international search (under Rule 23.1(b)).					
		the language of publication of the international application (under Rule 48.3(b)).					
		the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/ or 55.3).					
3.	3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:						
	X contained inthe international application in written form.						
filed together with the international application in computer readable form.							
	furnished subsequently to this Authority in written form.						
		furnished subsequently to this Authority in computer readable form					
		The statement that the subsequently furnished written sequence listing does not so bound the line					
		approduction as they has been fulfished.					
		The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.					
4.		The amendments have resulted in the cancellation of:					
		the elei at					
5.		the drawings, sheets					
•		This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box(Rule 70.2(c)).**					
	Replace in this c and 70.	ement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to Opinion as "originally filed." and are not annexed to this report since they do not contain amendments (Rules 70.16 17).					
**,	Any rep	elacement sheet containing such amendments must be referred to under item I and annexed to this report.					

INTERNATIONAL PRELIMINARY EXAMINATION

International aplication No.

PCT/KR2003/001820

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1.	Statement		·	
	Novelty (N)	Claims	1-33	<u>Y</u> ES
		Claims	NONE	No
	Inventive step (IS)	Claims	1-33	YES
	(15)	Claims	NONE	NO
	Industrial applicability (IA)	Claims	1-33	
	, , ,	Claims	NONE	NO

2. Citations and explanations (Rule 70.7)

Claims 1-9 of the present invention relate to a method for screening a mutant lipase having an improved enzymatic activity comprising (1) cloning a lipase gene into a surface display vector; (2) preparing a mutant lipase gene library by mutagenic PCR using the lipase gene in the surface display vector; (3) displaying the mutant lipase gene in the surface of cells by transforming the mutant lipase gene library of the step 2 and surface display vector fragment into host cells; (4) measuring the activity of the mutant lipase displayed in the surface of the transformed host cells and selecting the lipase showing evolved activity. Claims 10-26 relate to mutant lipase protein, a gene and an expression vector characterized in that #219 leucine and/or #278 leucine of Candida antarctica lipase B represented by SEQ. ID. No 14 is replaced by other amino acids. Claims 27-33 relate to a transformant in which the expression vector of claim 20 is introduced to host cells.

1. Novelty

The method for screening a mutant lipase of claims 1-9, mutant lipase protein, a gene and an expression vector of claims 10-26, and a transformant in which the expression vector of claim 20 is introduced to host cells of claims 27-33 are novel compared with the prior art documents cited in ISR [PCT Article 33(2)].

2. Inventive Step

The method for screening a mutant lipase of claims 1-9, mutant lipase protein, a gene and an expression vector of claims 10-26, and a transformant in which the expression vector of claim 20 is introduced to host cells of claims 27-33 are considered inventive since those inventions cannot be easily invented by a person skilled in the art from the prior art [PCT Article 33(3)].

3. Industrial Applicability

Claims 1-33 of the present invention are considered industrially applicable [PCT Article 33(4)].